

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) Device for checking or calibrating the angle-dependent alignment of a reference structure of a high-precision test piece-(1), comprising
 - a plinth-(2, 2a, 2b)
 - a retainer part-(3) for retaining the test piece-(1), the retainer part-(3) being mounted so as to be rotatable relative to the plinth-(2, 2a, 2b) about a retainer part axis-(4) and an angle of rotation of the retainer part about the retainer part axis-(4) between the plinth-(2, 2a, 2b) and the retainer part-(3) being measurable,
 - a measuring part-(5, 5a, 5b, 5c, 5d) having a measuring part bearing unit-(6, 6a) for mounting the measuring part-(5, 5a, 5b, 5c, 5d) so as to be rotatable relative to the plinth-(2, 2a, 2b) about a measuring part axis-(7) intersecting the retainer part axis-(4) at right angles, an angle of rotation of the measuring part axis-(7) between the plinth (2, 2a, 2b) and the measuring part-(5, 5a, 5b, 5c, 5d) being measurable,
 - an optical unit-(8, 8a, 8b, 8c) having an optical detector-(9) and arranged on the measuring part-(5, 5a, 5b, 5c, 5d) in such a way that at least one test piece beam (10, 10a, 10b, 10c, 10d) interacting with the reference structure of the test piece-(1) is detectable, which beam runs substantially in a plane through which the measuring part axis-(7) passes perpendicularly and in which the retainer part axis-(4) lies and which is intersected by a part of the measuring part (5, 5a, 5b, 5c, 5d) and produces at least one point-(12) on the detector-(9), and

- a control/regulation unit ~~(13)~~ which is formed and connected in such a way that the optical unit ~~(8, 8a, 8b, 8e)~~ can be automatically aligned by means of a motor relative to the reference structure of the test piece ~~(1)~~ by means of motor-powered adjustment of the retainer part ~~(3)~~ and of the measuring part ~~(5, 5a, 5b, 5c, 5d)~~ as a function of the position of the at least one point ~~(12)~~ on the detector ~~(9)~~, and the angle of rotation of the retainer part and the angle of rotation of the measuring part can be automatically determined, characterized in that
 - the measuring part bearing unit ~~(6, 6a)~~ is arranged on a single side of the measuring plane ~~(11)~~ or in the measuring plane ~~(11)~~, and
 - the measuring part ~~((5, 5a, 5b, 5c, 5d))~~ has a basic shape which encompasses or encloses the point of intersection of the measuring part axis ~~(7)~~ with the retainer part axis ~~(4)~~ on the measuring plane ~~(11)~~ and hence the test piece ~~(1)~~ and is for a substantial part axially symmetrical with respect to the measuring part axis ~~(7)~~.
2. (Currently Amended) Device according to Claim 1, characterized in that a substantial part of the measuring part is in the form of a measuring rocker ~~(5, 5a, 5b)~~ with mirror symmetry with respect to a plane in which the measuring part axis ~~(7)~~ lies.
3. (Currently Amended) Device according to Claim 1, characterized in that a substantial part of the measuring part is formed so as to be rotationally symmetrical with respect to the measuring part axis ~~(7)~~ and has in particular the shape of a measuring wheel ~~(5e)~~ or measuring ring ~~(5d)~~ or of a disc.
4. (Currently Amended) Device according to Claim 1, characterized in that the measuring part ~~(5, 5a, 5b, 5c, 5d)~~ is formed so as to have at least two parts,

- the optical unit ~~(8, 8a, 8b, 8e)~~ being arranged on a first part-element of the measuring part ~~(5, 5a, 5b, 5e, 5d)~~ and
- an optical deflection element – in particular a reflective unit or an optical fibre – being arranged on a second part-element of the measuring part ~~(5, 5a, 5b, 5e, 5d)~~

in each case in such a way that the test piece beam ~~(10, 10a, 10b, 10e, 10d)~~ can be deflected or can be guided to through the optical unit ~~(8, 8a, 8b, 8e)~~.

5. (Currently Amended) Device according to Claim 1 characterized in that

- the optical unit is in the form of an autocollimator ~~(8, 8a)~~ for checking the direction, comprising
 - an emitter ~~(31a)~~ for generating radiation,
 - the detector ~~(9)~~ and
 - an optical unit objective ~~(34a)~~ for shaping the radiation into a transmitted beam ~~(35a, 35b)~~ and for focusing the test piece beam ~~(10, 10a, 10b)~~ on to the detector ~~(9)~~,

and

- the reference structure of the test piece ~~(1)~~ or a part connected to and interacting with the reference structure has a reflection surface ~~(36, 39)~~ for reflection of the transmitted beam ~~(35a, 35b)~~, the reflected transmitted beam forming the test piece beam ~~(10, 10a, 10b)~~.

6. (Currently Amended) Device according to Claim 5 characterized in that

- the autocollimator ~~(8, 8a)~~ has an auxiliary lens unit ~~(37a)~~ for variable shaping of the transmitted beam ~~(35b)~~ and of the test piece beam ~~(10, 10b)~~ and

- the reflection surface is formed by a convex or concave surface of a part forming the reference structure – in particular of a lens ~~(39)~~ of an objective ~~(16)~~ – of the test piece ~~(1)~~.

7. (Currently Amended) Device according to Claim 1 characterized in that

- the optical unit ~~(8, 8a, 8b, 8e)~~ is in the form of a camera and the optical detector ~~(9)~~ is in the form of a light-sensitive image sensor for recording an image and
- the control/regulation unit ~~(13)~~ is formed and connected in such a way that the motor-powered alignment of the optical unit ~~(8, 8a, 8b, 8e)~~ relative to the reference structure of the test piece ~~(1)~~ is effected as a function of the result of processing of the recorded image of the optical unit ~~(8, 8a, 8b, 8e)~~.

8. (Currently Amended) Device according to Claim 1, characterized in that an additional optical unit ~~(15)~~— comprising in particular an additional emitter or an additional mirror or an additional camera – is arranged on the measuring part ~~(5, 5a, 5b, 5c, 5d)~~ on that side which is opposite the optical unit ~~(8, 8a, 8b, 8e)~~ with respect to the measuring part axis ~~(7)~~.

9. (Currently Amended) Device according to Claim 8, characterized in that

- the additional optical unit ~~(15)~~ is in the form of an autocollimator for checking the direction – in particular in relation to an eye piece of the test piece ~~(1)~~, and
- the control/regulation unit ~~(13)~~ is formed and connected in such a way that the motor-powered alignment of the optical unit ~~(8, 8a, 8b, 8e)~~ relative to the reference structure of the test piece ~~(1)~~ is effected as a function of the result of

checking of the direction by the additional optical unit-(15) in the form of an autocollimator.

10. (Currently Amended) Device according to Claim 8, characterized in that

- the additional optical unit-(15) is in the form of a camera for recording an image and
- the control/regulation unit-(13) is formed and connected in such a way that the motor-powered alignment of the optical unit-(8, 8a, 8b, 8e) relative to the reference structure of the test piece-(1) is effected as a function of the result of processing of the recorded image of the additional optical unit.-(15).

11. (Currently Amended) Device according to Claim 1, characterized in that

- the device is in the form of a test machine for checking a geodetic measuring instrument – in particular a theodolite, a level or a geodetic scanner – having an optical sighting unit-(18) which defines a sighting axis and is rotatable about a vertical axis-(20) and optionally pivotable about a tilting axis-(21),
- the retainer part-(3) is formed in such a way that a lower part-(19) of the test piece can be fixed on the retainer part-(3), the vertical axis-(20) substantially coinciding with the retainer part axis-(4) and optionally the tilting axis-(21) substantially coinciding with the measuring part axis-(7),
- the device is designed so that the optical sighting unit-(18) and the optical unit (8, 8a, 8b, 8e) can aligned relative to one another about the retainer part axis (4) and the measuring part axis-(7), the direction of the test piece

beam-(10, 10a, 10b, 10c, 10d) and that of the sighting axis having a definable relationship,

- the control/regulation unit-(13) is formed and connected in such a way that a measured test piece horizontal angle and optionally a test piece vertical angle can be determined.

12. (Currently Amended) Device according to Claim 11, characterized by a handling robot (22)-which can be actuated by the control/regulation unit-(13) and is arranged in such a way that the optical sighting unit-(18) of the geodetic measuring instrument can be aligned by means of the handling robot-(22).

13. (Currently Amended) Device according to Claim 1, characterized by a thermal emitter which is arranged in such a way that the test piece-(1) can be heated at least from one side for determining the thermal behaviour.

14. (Currently Amended) Device according to Claim 1, characterized in that

- the device has means for inclination which are arranged in such a way that the test piece-(1) can be inclined by inclining the plinth-(2, 2a, 2b) and/or the retainer part₁-(3),
- the control/regulation unit-(13) is formed and connected in such a way that measured values of an inclinometer of the test piece-(1) are automatically detectable.